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Heartfelt Musicking: The Physiology of a Bach Cantata

Le coeur a ses raisons que la raison ne connaît point: on le sait en mille choses.
—Blaise Pascal, *Pensées* (1670)

THERE IS A NOTATIONAL ODDITY in the autograph score of Johann Sebastian Bach's Cantata 199, "Mein Herze schwimmt im Blut" (My heart is swimming in blood). Instead of writing out the word "heart" every time it appears in the text, at several points the composer used the familiar heart symbol—not exactly shaped like the physical organ, but apparently as instantly recognizable then as it is now.[1] In some instances, the abbreviation may have resulted from pragmatic considerations of space (fig. 1a), but in others clearly not (fig. 1b). Instead, perhaps Bach was invoking, in an inconsequential and semi-private manner, the rich significatory potential of this pictogram. Already by the early seventeenth century, the heart image had come to appear frequently in a variety of contexts, from courtly chivalry and religious iconography to sets of playing cards, encompassing an extensive field of associations and meanings. Severed from the human body, the organ could be subjected to a dazzling variety of treatments, as in the extraordinary *Emblemata sacra* (1622) by the German Lutheran theologian Daniel Cramer. In this widely distributed volume of devotional emblems, the heart appears in no fewer than fifty different scenarios, demonstrating its protean capacity to stand in for the believer's life, soul, conscience, consciousness, memory, earthly existence, or inner self: the heart as a rock being softened by God's hammer, a winged heart escaping from the claws of earthly demons up to heaven, the heart with a seeing eye, Jesus inscribing his name on the heart, the heart adrift in a stormy sea, a burning heart filled with cooling liquid from the Holy Spirit, the heart's mettle being tested in a hot oven, and so on (fig. 2).

ABSTRACT This essay proposes a somatic archaeology of German Lutheran music making around 1700. Focusing on a single cantata by Johann Sebastian Bach, it sets out to reconstruct the capacities of early modern body-souls for musical reverberation, affective contagion, and spiritual transformation.
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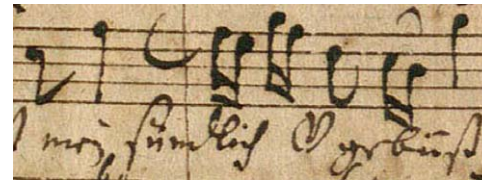

FIGURE 1a. "Mein sündlich Herz gebüßt," Johann Sebastian Bach, "Mein Herze schwimmt im Blut," BWV 199/2, autograph. Copenhagen, Det Kongelige Bibliotek, DK-Kk mu 6701.0731 Weyses Samling (C I, 615).

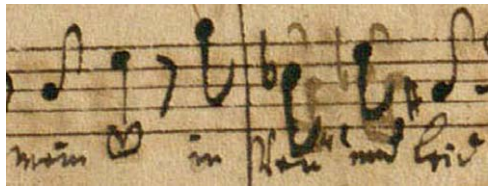

FIGURE 1b. "Mein Herz in Reu und Leid," BWV 199/3, autograph. Copenhagen, Det Kongelige Bibliotek, DK-Kk mu 6701.0731 Weyses Samling (C I, 615).

FIGURE 2. Daniel Cramer, *Emblemata sacra, Das ist: Fünfftzig Geistliche in Kupffer gestochene Emblemata* (Frankfurt, 1622), 109. Herzog August Bibliothek Wolfenbüttel, Signatur Th 469.

As the seat of life and the source of sin, the heart in the Christian tradition mediated between flesh and spirit. It could taste, sing, sigh, and melt; it could be given to God or cleaned out and inhabited by Christ. And so one might also imagine a heart "swimming in blood," as the German poet Georg Christian Lehms wrote in his cantata libretto of 1711; a text set to music not only in 1714 by Bach but also two years before by his German contemporary Christoph Graupner, and subsequently heard by congregations in Weimar, Cöthen, Leipzig, and Darmstadt.[2] Lehms's poem draws on a long-standing Christian devotional tradition that conjoined hearts and bodily fluids, in visions of faithful hearts crying blood or sinners' hearts drenched in waters

of fear. But what was it like to be a body whose heart could undergo such procedures? What kind of physiology underpinned the veracity of these formulations? Simply casting them as poetic flights of fancy would mean disregarding the fundamentally embodied nature of such metaphors, which acquired their meaningfulness precisely through a more or less tangible link to a perceived corporeal reality. In heeding Gail Kern Paster's call for an "interpretive literalism" in approaching early modern tropes based on bodily parts and functions, we might instead start from the assumption that experiences of seventeenth- and early eighteenth-century bodiliness were historically particular in such a way that they could give rise to this kind of imagery without too great a sense of rupture or alienation.[3] If Lehms's poetry strikes some present-day listeners as "repellent," this response may exactly map out the distance to be traversed in order to recover those past modes of being-in-the-body that could produce and sustain such language.[4]

Recuperating these historical forms of bodiliness has formed a key preoccupation of early modern scholarship at least since Thomas Csordas's programmatic call in 1990 for a focus on "embodiment" in the study of human cultures, approaching the body less as a text to be deciphered than as the locus of lived experience.[5] Of course, as Mark M. Smith has recently reminded us, any claims toward the recovery of a usable, consumable sensory past, potentially culminating in "lickable text, scratch-and-sniff pages, touch-and-feel pads" to convey an authentic historical experience to present-day readers, must be treated with extreme caution.[6] My argument here, too, stays well clear of an attempt to recreate for current listeners any of those past corporeal habits of which a careful historical investigation might offer some glimpses; music already went through its own "authenticity" debate some decades ago, after all.[7] Still, Bruce R. Smith's invitation to "project ourselves into the historically reconstructed field of perception as far as we are able" can seem particularly intriguing in the case of music, since it not only encompasses the duality of presence and pastness in uniquely challenging ways but also ostensibly performs that effortless merger of sensation and meaning, both of which it produces in abundance, every time it sounds.[8] Past musical practices and sound worlds in this sense offer an especially promising access point for a historical inquiry that aims to steer a course between the two extremes of positing the body either as pure presence or as mere representation.

In the early modern context, such an exercise in retro-projection initially requires a fundamental repositioning of the category of "body," by which that post-Cartesian self-contained entity separate from the mind is refigured instead as "body-mind," or, in Susan James's terminology, "body-soul composite."[9] The wealth of physiological and psychological processes

that constituted these body-souls comes into sharp focus when setting out to reconstruct the ways in which music acted upon or within them. Since the historical record is frustratingly slim with regard to actual flesh-and-blood listeners caught in the act, their experiences of engaging with music (in particular in the context of a worship service) are pieced together here from a range of theological, scientific, and musical sources chosen for their proximity to the German Lutheran milieu inhabited by Bach. If, as Daniel Chua has observed, by the middle of the eighteenth century music would by and large come to be understood as only that which is heard, it is this later reduction to the acoustic that needs to be reversed (unthought and unfelt) in order to recapture how music's sounding materials reverberated not only through "throats, mouths, lungs, ears, and heads" but also through hearts, guts, and limbs, as well as spirits and souls.[10] Although the study of music as a performed, sounding activity has recently become something of a new orthodoxy within musicology, and this focus on performance has made the bodies behind (or, rather, in) music more immediately tangible, those bodies are still in need of much more nuanced historicization. Like James Q. Davies in his recent study of nineteenth-century virtuosity, I suggest that acts of musicking, in their capacity not just to reflect but to generate particular modes of inhabiting the body, offer a hitherto underused resource in coming to grips with the animate bodies of the past.[11] What I envisage, then, is a kind of somatic archaeology that pushes Elizabeth Le Guin's proposal of a "carnal musicology" to a new level of fleshliness.[12] Such an approach might thereby begin to address that "huge gap in early modern sensory history" to which Penelope Gouk has recently alerted us, moving toward a radically revised, somatic ontology of early modern music making.[13]

Gouk's work on early modern English culture has gone some way to show how the Galenic conception of the human body as porous, unbounded, and in flux governed conceptions of music's affective and healing power at the time.[14] This physiology centered on the heart as the generator of the body's vital heat. The joint impact of William Harvey's discovery of blood circulation in 1628 and Descartes's separation of the thinking "I" from its physical manifestation gradually reshaped the idea of the heart as the engine of a hydraulic machine: the heart, wrote the German medic Johann Helfrich Jüngken in 1699 in a by then standard formulation, is "the most important component of our pumping apparatus or hydraulic display."[15] Nonetheless, the venerable theory of the humors and vital spirits guiding the operations of human life persisted well into the eighteenth century, together with the vexed question of where within that mechanical contraption a soul might be located. For the Cartesians, the answer was decidedly the brain: a 1734 anatomical

treatise by the Prussian educator Johann Julius Hecker, for instance, confirmed that "all sensations concentrate in the brain and anything one might suppose to be sensing in other parts of the body actually happens in the brain . . . hence the soul is active there in particular, which is evident, among other things, from the fact that headaches easily arise when one cogitates long and hard."[16] According to the rationalist philosopher Christian Wolff, too, the sensory organs themselves could not see, hear, smell, taste, or feel before the impulse had been carried to the "actual workshop in which those transformations occur that relate to the sensations and other operations of the soul."[17] Any communication between the soul and its physical container happened via the "nerve fluid," a subtle, undetectable substance secreted in the brain and distributed via the nerve fibers to all parts of the body, in order to instigate muscle movement or carry sense impressions back to the soul.

Yet such a resolutely mechanistic explication failed to address the mystery of how this "abyss of comprehension," as Wolff called the brain, could enable a meaningful interface between human consciousness and the outer world. Writing in 1743, the Prussian naturalist Johann Jacob Schmidt pinpointed this conundrum. His broader project of a biblically grounded medical textbook, entitled *Biblischer Medicus*, encapsulates the seamless contiguity of matters of faith and body that underpinned contemporary experiences of corporeality. The brain, Schmidt wrote, is

> a book in which nothing and everything is written, with so many thousands upon thousands of different ideas which you can have and then drive from your mind again at will . . . you can travel from one end of the earth, even from one end of the heavens to the other in a single instance. And yet the pages of this book are nothing but hair-thin fibers, out of which the whole brain is made up.[18]

As Judith Becker has argued, current neuroscientific research on the whole has not moved on substantially from this position of bafflement. "Neurophysiological explanations are as yet primitive when dealing with human action, human perception, and human motivations," she writes. "The bridge between the physical embodiment of the brain and the phenomenological experience of being-in-the-world has not yet been built."[19] If some promising answers today seem to await in the field of embodied cognition, its grounding conception of an "extended" mind embedded in a purposive, intelligent body appears surprisingly akin to certain early modern alternatives to Descartes.[20] Hence a popular anatomy treatise by the Dutch physician Steven Blankaart of 1687 (published in German translation in 1691) asserted that the soul resided "not solely in the brain, but in all other parts in which the bodily fluids run . . . and as the fluids are united with the body, so the soul is also conjoined with the

body."[21] In this animist model, sensation happened by way of the soul immediately perceiving and comprehending a stimulus in the place that it first encountered the body, that is, in the touching hand or the seeing eye. In a similar vein, another Dutch medical tract (also translated into German in 1713) mocked the belief in some kind of "speedy postal service" that allegedly transported information from sense organ to soul, instead maintaining that "where the soul senses, there it is immediately present to the body and to itself."[22] And the Danish physician Georg Heuermann, in his textbook series on human physiology of 1751–55, used the example of musicians' virtuosic finger skills to argue for a distributed, corporeal model of memory, in which the capacity for recall was not confined to a disembodied mind but resided in the intelligent agency of the body's limbs and organs.[23]

The act of hearing, and hearing music in particular, further complicated the dualists' certainties. Resonance, as Veit Erlmann has elaborated, posed an awkward challenge to the hegemonic claims of early modern reason.[24] The basic mechanics of the auditory process were explained easily enough. According to Heuermann, here writing in 1752,

> when something is meant to be heard, first a trembling motion needs to be instigated in the air, which is then transmitted to the ear and causes a trembling motion on the eardrum, by which the ear bones are set into motion, and the air in the ear cavity is equally shaken. By way of the oval and round windows, this causes a change in the cochlea and the vestibule and brings the air inside into an equivalent motion. This then makes an impression in the nerves, whereby the nerve fluid is shaken and brought to the brain, where the representation of the sound takes place.[25]

Strikingly, even the flow of these fluids themselves could occasionally be perceived in this manner, as they could reportedly cause a "buzzing and humming" in the ear when their natural balance was disturbed.[26] But how the ear's peculiar anatomy actually accomplished this feat of sound transmission remained unresolved. Wolff found it "astonishing that the eardrum can communicate so many very different kinds of sounds with such clarity," and Hecker commented similarly:

> How miraculous does it seem that through the curious position of the auditory nerves the vital spirits can be stirred into fast motion, that the affects can be greatly moved or assuaged again . . . and that music not only delights the imagination, but also rids our hearts of sorrow and distress, as well as calming all those raging passions of the soul arising from excessive fermentation and flow of our blood?[27]

Music thus pinpointed the problematic nexus of body and soul through its uncanny capacity to manipulate the affections, those "mixed motions"

that engaged a subject's physical and psychological faculties simultaneously, and which posed such a troublesome disruption to Descartes's binaries.[28] These affective motions evinced a human soul-body continuum that challenged any meaningful distinction between blood and nerves on the one hand, and morality and virtuous action on the other. Envy, for instance, a kind of "secret hatred mixed with sadness," was a morally reprehensible affection arising from a wicked heart; it caused not only sleepless nights and loss of appetite, but as gall juices flooded the body, they turned its liquids increasingly sour, inducing a consumptive condition.[29] In joy, according to Schmidt's *Biblischer Medicus*, "the heart expands in such a way that it ejects the blood forcefully into the outer limbs," producing a pleasant warmth, a fast flow of the spirits and an increased liveliness in the whole body; it made people generous and directed them toward a righteous enjoyment of life. Sadness, on the other hand, impeded the blood flow, thickening it to a slimy and viscous consistency, which caused the heart to be "inundated by an excessive flow of blood."[30]

Here, then, we seem to be moving toward a physiological basis for Lehms's image of the heart submerged in blood. Written for the eleventh Sunday after Trinity, his cantata libretto portrays a sinner's journey from terror through remorse and prostration to the joy of salvation. The opening recitative articulates the anguish and fear of hell inspired by the believer's own sinfulness:

Mein Herze schwimmt im Blut	My heart swims in blood,
Weil mich der Sünden Brut	Since sin's brood
In Gottes heilgen Augen	In God's holy eyes
Zum Ungeheuer macht.	Makes me a monster.
Und mein Gewissen fühlet Pein,	And my conscience feels pain,
Weil mir die Sünden nichts	Since for me my sins can be nothing
Als Höllenhenker sein.	But the hangmen of hell.
Verhasste Lasternacht!	O hated night of vice!
Du, du allein	You, you alone
Hast mich in solche Not gebracht;	Have brought me into such misery;
Und du, du böser Adamssamen,	And you, you evil seed of Adam,
Raubst meiner Seele alle Ruh	Rob my soul of all repose
Und schließest ihr den Himmel zu!	And close off heaven to it!
Ach! Unerhörter Schmerz!	Ah! Unheard-of pain!
Mein ausgedorrtes Herz	My dried-up heart
Will ferner mehr kein Trost befeuchten	No comfort will moisten any longer
Und ich muss mich vor dem verstecken,	And I must hide myself from Him
Vor dem die Engel selbst ihr Angesicht verdecken.	Before whom even the angels cover their faces.[31]

The lesson for the pious is clear: Original sin has left humanity in a state of eternal condemnation, which can only be alleviated through due penitence

(on account of Christ's sacrifice). But if Bach's cantata settings have customarily been viewed as "sermons in music" that served to underline the scriptural message of the day, an exclusive focus on religious doctrine here would end up glossing over the concrete bodily realities at stake.[32] In the description of the Prussian court physician Georg Ernst Stahl from 1728, a sense of fear could arise when "there is a large overabundance of blood, and its liquescence has already been much reduced, or the blood has become thick." According to Stahl, "it is then common that palpitations occur, namely a greater than usual effort or increase in those motions that serve the circulation of the blood. This usually goes along with an unusual circumspection, fearfulness, and apprehension of the soul, which can even break out in grave and frightening dreams."[33] Schmidt, again writing in his *Biblischer Medicus*, attested similarly that in an anxious state, "the sensitive soul pulls into itself, so to speak . . . in such a distressed condition, the blood collects in the chambers of the heart and cannot be propelled into the outer limbs by this weakened pump; and because of a lack of motion and agitation of the blood particles this red mill stream becomes thick and viscous."[34]

From this angle, a heart "swimming in blood" would have read as a symptom of a particular medical-affective condition of fluid plethora, which, like any other affliction at the time, harbored direct moral implications. Its physiological and psychological dimensions were so closely interwoven that an orderly sequence of cause and effect could not easily be established. As the Lutheran cleric Sigismund Scherertz had outlined in his 1682 treatise on melancholy, "When the healthy spirits in the blood vessels become infected and contaminated, not only are the bodily fluids altered, but also the inner thoughts."[35] And if the early modern medical consensus held that all illness resulted from a disturbance in the body's flows, its root cause was widely taken to be humanity's sinful state: according to Schmidt, "the main source and the mother of all illness is sin."[36] A devotional tract by the English Puritan Daniel Dyke, translated into German in 1681 and widely influential in the spread of Pietist thought at the time, explained that sin "commits its worst fraud by first sneaking into the heart and then with its hellish heat drying out all good moisture and vigor, until the heart becomes hard as stone and completely without feeling."[37] Dyke's formulation sheds helpful light on the reference to the believer's "ausgedorrtes" heart later on in Lehms's recitative text, and its seeming incongruity with the liquid imagery of the opening line: both a dried-up and an inundated heart could be the source (or symptom) of a corrupted faith, in a system that was neither closed nor necessarily coherent terminologically, but in which physiological data could not be divorced from their felt experience and impact on a believer's path to salvation.

The cure for such disruptions of flow as suffered by Lehms's faithful subject was obvious to practitioners at the time: the juices had to run again. Although by the early eighteenth century numerous skeptical voices had been raised against the age-old practice of bleeding, it still formed the chief remedy for most physical and mental ailments. Hence Stahl's practical textbook advised: "If in such a patient a plethora seems to be causing problems, these need to be addressed through timely bleeding, whereby the amount of blood is reduced and its surplus and impurities are expelled, or, as far as possible, adjusted and alleviated."[38] Notably, the same language of flow and expulsion characterized contemporary theological guidance for relieving states of fear and guilt. In Dyke's terms, "true tears of remorse have a very productive and cleansing power and effect." Further on, he explained that "it often happens, especially in great anguish and sadness, that the tears are all blocked up, as if the heart wanted to keep them to itself and swim and bathe in them"; only when they started to be released could true penitence occur.[39] In the aria following his opening recitative, Lehms ensured that such an outflow took place:

Stumme Seufzer, stille Klagen	Mute sighs, silent laments
Ihr mögt meine Schmerzen sagen	You may tell my sorrows,
Weil der Mund geschlossen ist.	For my mouth is closed.
Und ihr nassen Tränenquellen	And you, moist springs of tears,
Könnt ein sichres Zeugnis stellen,	Can bear certain witness
Wie mein sündlich Herz gebüßt.	Of how my sinful heart repents.
Mein Herz ist jetzt ein Tränenbrunn,	My heart is now a well of tears,
Die Augen heiße Quellen.	My eyes hot fountains.
Ach Gott! Wer wird dich doch zufriedenstellen?	Ah God! Who then will satisfy you?

In a physiological system where different types of fluids were easily transformed into each other—Scherertz noted that in a melancholic condition, the blood could turn to pus in the blood vessels, and Wolff discussed whether nasal mucus was an outflow of the brain—it mattered little whether this outpouring happened through blood or tear water. According to Stahl, a plethora could be eased not only through bleeding but also through the body curing itself internally, by transforming the excess of blood into a watery substance and expelling it as sweat, urine, or other types of excretions.[40] The Pietist writer August Hermann Francke's image of tears overflowing the heart to emerge from the eyes similarly confirms this mutability: "Blessed are those who let drop many tears of remorse and tears of the cross into their heart, so that finally they can no longer contain them within, but let them spill out of their eyes frequently and regularly."[41] Scherertz found, too, that "from all the tears and sighs the fearful and pressured heart is swimming in waters of fear, so to speak, and such inner

sweat of fear rises up to the brain, which emits these internal drops and lets them fall from the eyes onto the cheeks." And later on: "Tears are often the nourishment of the sad, they lighten the soul, cool the heart and assuage the mind of the sorrowful, they expel a lot of foul vapors, so people feel lighter and less troubled, calm themselves down with crying, and pour out the pain together with it."[42] An inability to speak, meanwhile, as portrayed in the opening portion of Lehms's aria text, was also commonly associated with strong feelings of remorse, since, according to some contemporary anatomical primers, the nerves of the larynx were directly connected to the heart.[43] As Dyke noted, penitential sentiments could become so ardent that "words are lacking to express them with the tongue: those are the unspeakable sighs of the soul," and the widely read seventeenth-century theologian Heinrich Müller affirmed that "nature bound the tongue to your heart with a blood vessel, so that together with your tongue you should also give your heart to God."[44]

In Lehms's libretto, the process of purging initiated in this aria reaches its nadir in the intensely repentant fourth movement, "Tief gebückt und voller Reue" (Deeply prostrated and full of remorse), and culminates in the final aria, "Wie freudig ist mein Herz," where the purified heart is restored to its full vigor, able once again to supply those regular and pleasantly warm pulsations of joy:

Wie freudig ist mein Herz	How joyful is my heart,
Da Gott versöhnet ist	Since God is reconciled
Und mir auf Reu und Leid	And for my repentance and suffering
Nicht mehr die Seligkeit	No longer from eternal bliss
Noch auch sein Herz verschließt.	Nor from His heart excludes me.

Scherertz elaborated further on the corporeal ramifications of this state of joyousness: "When a person has a joyful temper and the heart is full of joy, the heart opens up, gives all vessels fresh blood . . . so the person becomes lighthearted, the stomach digests well, lungs and liver are refreshed, all vessels are activated and strengthened, a long and happy life follows. For such a heart everything that is consumed tastes good."[45] Health and good faith were so intimately conjoined that the well-being of one ineluctably determined the other, with the majority of Lehms's metaphors falling somewhere in between the interlinked domains of theology and pathology.

My main concern here, however, is not so much with how each formulation in Lehms's libretto could be matched with a recognized medical syndrome (though this particular script may seem to lend itself to such an exercise). It is rather to emphasize that the bodily-spiritual practice outlined in his poem is grounded in a particular physiology, without which not only such a text but also its musical settings can be only partially appreciated. Past

musicological interpretations of Bach's cantatas have tended to focus on this music's representational qualities, explaining how particular musical turns of phrase depicted either a specific affective content or theological message. Hence Calvin Stapert finds that the music of the first recitative in BWV 199 "rhetorically heightens the impact of [the libretto's] words. It highlights the key words with harsh dissonances (both melodic and harmonic) and jagged leaps."[46] Even Isabella van Elferen, whose stance is much more alert to this music's somatic dimension, reads the music for the recitative "Wiewohl mein Herz in Tränen schwimmt" (Although my heart is swimming in tears) from Bach's *St. Matthew Passion*—another heart submerged in fluids—as corresponding "in minute detail" to the textual content. The flowing triplets in the oboe parts, she claims, "give musical representations of the tears spent by the believer" (fig. 3).[47]

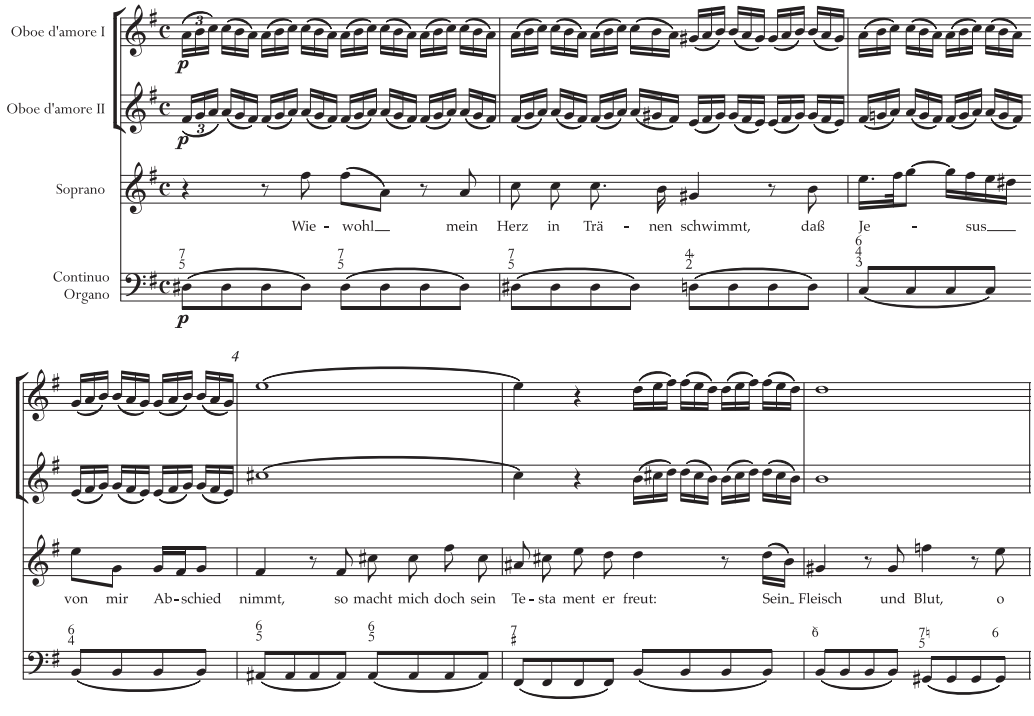

FIGURE 3. Johann Sebastian Bach, *St. Matthew Passion*, BWV 244/12, mm. 1–6.

Such readings, I would argue, vastly underestimate the potential ascribed to this music precisely to short-circuit the representational involvement of the brain in the aural experience, instead giving rise to a psychosomatic process in which, in Bruce R. Smith's terms, "the passions 'hear' sensations before

reason does."[48] This does not merely extend to the truism, reiterated in most contemporary Lutheran writings on music, that words reached the heart more effectively if music was attached to them: "The text of the Holy Scriptures are in themselves the loveliest music," wrote the early Lutheran reformer Johannes Mathesius, "but when a sweet and longing melody joins [the words] . . . the song receives a new power and goes deeper into the heart."[49] More radically, the persisting notion of humans as permeable body-souls allowed music, with its peculiar through-sounding qualities, to alter directly the kinetics of heart and spirit. Musical sound did not merely express but impress the affections, in other words, and in this capacity remade the bodies it entered. In his 1631 music treatise, the Protestant preacher Christoph Frick had asserted that singing acts "like a heart-bell, which penetrates all the arteries of the heart and thereby moves its affects."[50] A 1717 treatise by Christoph Raupach, penned in defense of the use of music in church, outlined the process in greater detail (drawing on the seventeenth-century philosopher Athanasius Kircher):

> The sound of music, which is much more spiritual than material, spreads together with the air it moves and is transported to the ear. It penetrates even solid bodies, but all the more so our human bodies, which are very full of holes and pores. It does not simply go in the ear, but also to the heart itself, which is the workshop of the vital spirits, which are dispersed throughout the brain, in and around the heart and the remaining parts of the body. These vital spirits consist of a very subtle and mobile blood vapor and are very easily moved by air that is moved harmonically or musically; this motion, because it is felt by the soul, produces different affective motions according to the different motions of the spirits.[51]

In the body imagined by Raupach, the reception of sonic stimuli was neither confined to the ear canal, nor did it stop with the skin. A couple of decades later, the German music critic Johann Adolph Scheibe summarized his ideal of musical expressivity as an invention which "causes in its listeners a motion" that "takes hold of the heart, bewitches the senses, freezes the blood and finally, upon recovery, induces wonder, thereupon reflection and ultimately a quiet sense of awe towards the infinite and eternal love of the Creator."[52] Here, again, the passions indeed appear to hear before reason does; or rather, both reason and faith are constituted and apprehended through the corporeal. And it was not just the music theorists who endorsed such a model of full-bodied audition. A 1734 treatise on "the effects of music on the living body" by Johann Wilhelm Albrecht, professor of medicine at the University of Erfurt, laid out three ways in which music could enter the body and cause emotional transformations within it: via the nerve fibers of the ear, leading to the brain; by means of adjacent nerve strands vibrating sympathetically with the auditory nerves; and through the sound waves agitating the fibers of the whole body, "without the intervention of the auditory

organs." These sonic "tremors," Albrecht asserted, "produce various and determined mutations of the solid and fluid parts, and out of this the effects of music on the living body can be explained."[53] Noncochlear hearing, one might call it, conceived as an anatomical as much as an aesthetic reality. As a kinaesthetic entity or "haptic voice," music exerted tangible pressure not just on the eardrum, but on all parts of a listener's embodied soul.[54] What these descriptions collectively suggest is that a musical enactment of Lehms's cantata text could ensure that the sentiments invoked in it genuinely affected congregants down to the smallest fibers of their beings.

Such a resonance-based model of music's emotive powers can read as strikingly akin to certain present-day conceptions of affect, encompassing, in Melissa Gregg and Gregory J. Seigworth's definition, those "visceral forces beneath, alongside, or generally other than conscious knowing."[55] The growing body of scholarship on affect over recent decades certainly offers fertile ground for a body-based reconsideration of these past musical practices. With regard to Bach's liturgical cantata performances, one might look in particular toward Donavan O. Schaefer's reframing of the sphere of religion as fundamentally structured through affect, both within and without the usually privileged domains of language or belief. His mapping of the "multitude of subterranean ways that religion flows through our bodies" lends eloquent support to the "liquefaction" of Bach's liturgical music proposed here.[56] Steve Goodman's outline of a "nonrepresentational ontology of vibrational force" similarly chimes well with the evident capacity of these musical-devotional rituals to foster experiences of affective immersion and contagion. In certain respects, Bach's cantatas may plausibly be considered a less cacophonous forerunner to the modern-day "sonic warfare" charted by Goodman, concerning present-day uses of acoustic force and how they affect populations. The vibrational field of an early eighteenth-century Lutheran worship service was centrally shaped by music in various forms, from the cantata performance to communal hymn singing and the reverberation of organ pipes. A reading of these musical elements of the liturgy as a "deployment of sound systems in the modulation of affect," to borrow one of Goodman's formulations, helpfully draws attention to the deeply political dimension of the "crowd control" measures implemented by the church in the weekly Sunday service.[57] It also allows us to account more persuasively for the fact that listening behaviors at those gatherings were often a far cry from the attentive absorption customarily expected at performances of this repertory today, instead forming part of a noisy, socially engaged, and multisensory affective envelope.[58]

And yet, the cultural-historical specifics of those sound events ultimately caution against a facile imposition of these present-day frameworks, even if recent affect theory has often grounded itself explicitly in what was initially

an early modern paradigm. In particular, the (in)conveniently opaque description of "affectus" in Baruch Spinoza's 1677 *Ethics*, as "the affections of the body whereby the body's power of acting is increased or diminished," has formed a crucial point of departure for the most prominent strands of recent thinking about affect.[59] Notwithstanding these habitual backward glances, however, much of this work has tended to operate with a transhistorical notion of the body that would require substantial adjustment were its theoretical formulations to become productive for historical inquiry. If we are to attempt a reconstruction of the particular "mind-body infections" that characterized an early eighteenth-century experience of Bach's liturgical music, clarity over what being in those minds and bodies entailed would need to constitute a paramount first step. The fallacy, recently pinpointed by Ruth Leys, that affect should be regarded as "independent of, and in an important sense prior to, ideology," is easily belied by the saturation of its associated key concepts—"body," "embodiment," and so on—with historically contingent knowledge and feeling.[60] Those historical specifics, in turn, can serve to sharpen other recent critiques of affect theory, including Goodman's work, that have pointed out its tendencies to reinscribe a dualist model of human nature, by "throw[ing] the mind out in the name of the body."[61] Clearly, in the early modern context illuminated here, music's affective reach very much encompassed all aspects of an assumed body-soul-mind continuum.

But if music's capacity to permeate the body-souls of Bach's listeners on a deeply visceral level was widely acknowledged, the question of how any particular musical means could achieve the desired emotional effects was harder to address. Citing Raupach's account of music's impact on muscular and nervous tension, the prolific German music theorist Johann Mattheson founded his answer in his *Vollkommener Capellmeister* of 1739 on straight analogy, proposing that "because joy is experienced through an expansion of our vital spirits, it follows rationally and naturally that this affect would best be expressed through wide and extended intervals."[62] The highest purpose of this affective state, for Mattheson, was the joyous praise of God, a cause that should impel people to seek this experience of spiritual expansion on a daily or even hourly basis, in particular through "joyful singing and sounding in churches or houses."[63] Raupach, meanwhile, attempted a more detailed analysis grounded in the classic Pythagorean notion of proportional harmony:

> The two consonances, namely the octave and fifth, cause a certain expansion of the vital spirits, more pronounced in the case of the former than the latter; which stems from the size of their proportions, which take the form of 1–2 and 2–3. . . . The smaller the proportions get, the less expansion occurs. For if the two thirds, which are called major and minor, in their proportions 4–5 and 5–6 are sent to the ear, one will find that the latter carries with it something sad and the former something

expanding and joyful, since the sixth part of a whole is smaller than a fifth. The smallest intervals with proportions 8–9, 9–10, 15–16, 24–25 etc. cause the ear to feel disgust and the vital spirits to contract ever more.[64]

In the tear-filled recitative from the *St. Matthew Passion* cited earlier (fig. 3), Raupach's theory certainly seems to be borne out. Its striking sequence of unresolved diminished chords, moving slowly across a spectrum of unpleasantly small proportional relations, would presumably have made an auditor's nerve fluids contract violently; while those repeated triplet figures in the oboes, constantly circling back upon themselves, could have induced a further stagnation in the spirits' natural flow, breeding sadness. Likewise, one might surmise that the awkward melodic intervals and sustained dissonances over a static bass in the opening recitative of BWV 199 (fig. 4) would have caused an equivalent obstruction in fluid circulation, leading to the appropriate response of dread. A comparable effect may reasonably be ascribed to any number of similarly themed, dissonance-ridden recitatives from Bach's cantata oeuvre—the first recitative of Cantata 12 ("Weinen, Klagen, Sorgen, Zagen") springs to mind, for instance, with its fourfold chromatically inflected envoicing of the word "Trübsal" (sorrow). Yet perhaps such direct analogies of piercing discords causing palpable stabs in the heart region once again render this music's affective charge too easily legible. After all, Raupach identified numerous further factors in music's capacity to modulate the body's economy of fluids, including

artful melodic construction; tempo; meter; appropriate repetitions and reprises; a high, medium or low register; the rapidity or slowness of the notes or the beat; many words known from rhetoric that give rise to allusions and nice expressions; observing decorum, honesty and utility from ethics; a careful consideration of the time, place, circumstances and persons involved; and a good selection of sometimes these, sometimes other human voices and instruments.[65]

Raupach notes any and all musical variables, in other words, in myriad unquantifiable combinations, producing that lived emotional reality that varies from body to body and resists easy categorization. What, after all, did an affection like pious sorrow really feel like? The late seventeenth-century Lutheran minister Christian Scriver, whose devotional tract *Seelen-Schatz* was reprinted several times in the decades after 1700, attempted the following portrayal: "A mixture of worry, sadness, fear, dread, terror, hatred, ardor, shame, humility, doubt and hope; these potent motions of the heart are differentiated with words when one attempts to describe them to others, but in fact they all run through each other in a wondrous tangle."[66] Scriver's perceptively multivalent characterization chimes with Wolff's physiological explanation for why a nerve strand had to consist of so many separate fibers next to each other, because every sensation, he claimed, held innumerable

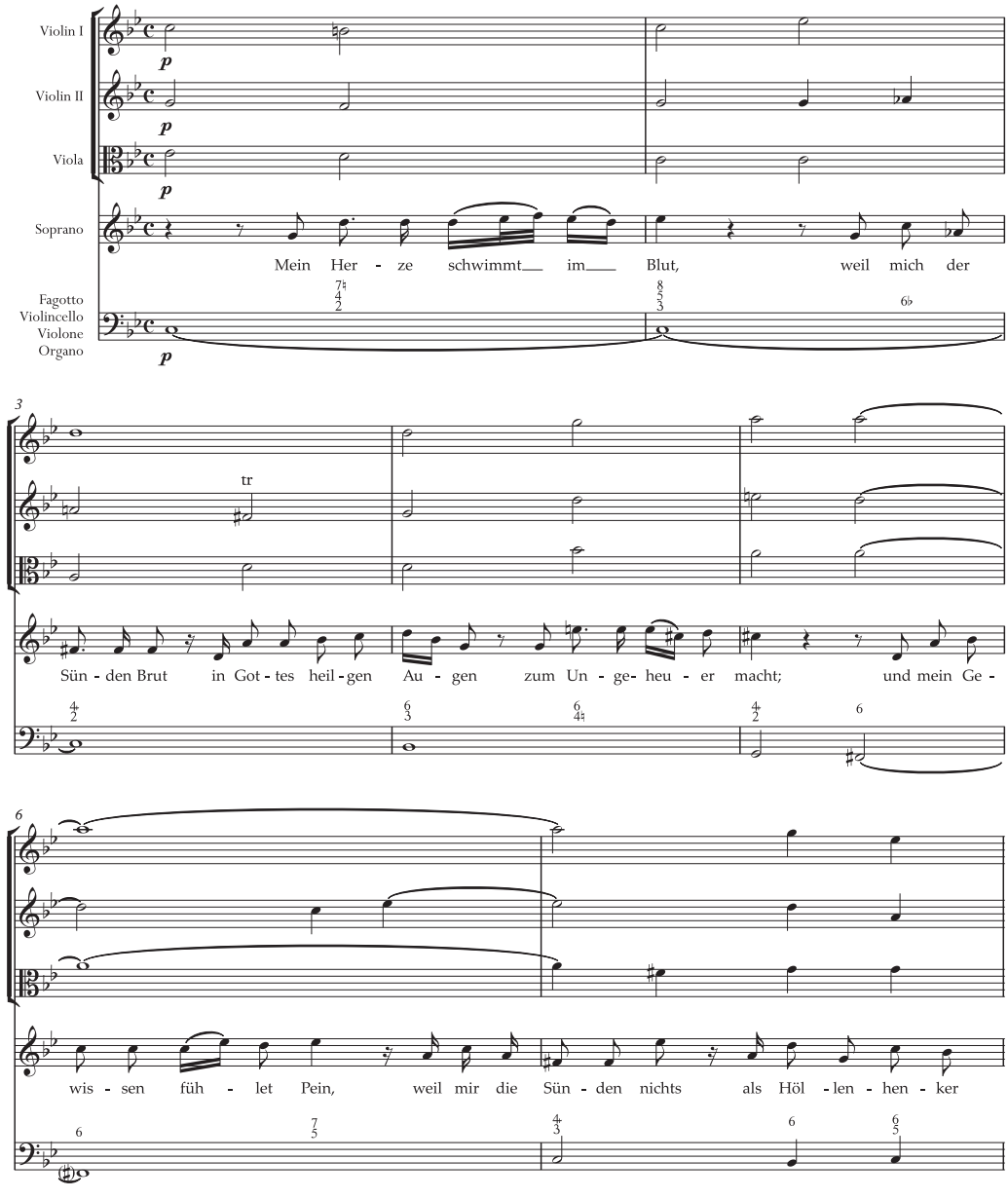

FIGURE 4. Bach, "Mein Herze schwimmt im Blut," BWV 199/1, mm. 1–7.

others within it.[67] It also serves as an implicit indictment of Mattheson's notorious attempt, in the same *Capellmeister* volume, at an exhaustive taxonomy of musical styles and their distinct affective qualities, in which the impetus to ascribe specific expressive content to musical gestures seems to

have gained the upper hand over spiritual-corporeal vibration. Instead, as a nonverbal affective medium, music was ideally placed to encapsulate exactly those unspecifiable admixtures of psychosomatic motions. As Naomi Cumming has explored with regard to Bach's famously heart-rending aria "Erbarme dich," also from the *St. Matthew Passion*, such music crucially served to give voice to "an inchoate understanding of an experience that has not been named."[68]

Aside from Cumming's work, however, modern-day analytical approaches to Bach's affective language have tended to leave little room for such inchoateness, built as they have been on the twentieth-century construct of Baroque *Affektenlehre*, that supposedly clear-cut system of expressive signification extrapolated from those Matthesonian affective categories.[69] Yet any assumed sense of certainty about the representational content of a particular series of notes begins to seem less self-evident in light of contemporary accounts of how music impinged upon human body-souls. A more suitable theoretical framework, then, for apprehending this music's emotive charge, might be Jenefer Robinson's characterization of emotions occurring in "streams," whose ebb and flow we experience acutely, but whose specific content often remains elusive.[70] Robinson's liquescent metaphors, drawing on the work of the social psychologist Phoebe Ellsworth, resonate suggestively with the language used to describe the anatomical and spiritual constitution of listening bodies around 1700. Hence, in Bach's setting of Lehms's first aria, one would be hard pressed to label its precise affective substance; but one might suggest that the very opening phrase in the oboe, rising in an awkwardly contorted shape over the dissonant span of a ninth (fig. 5a), may have generated a certain kind of "overflowing" sensation in a putative listener swamped by their own sinfulness. Later on, the conspicuous melismatic ascents in the voice emerging from the long-held notes over the word "geschlossen" (figs. 5b and c) could further have stirred worshippers' spirits to well up in a particular kind of purgative flow. As the mouth, according to the text, remains closed, the singing voice seems to actualize a vision of the heart itself "becoming the mouth," as a Protestant hymnal of 1694 put it, the affective sonority serving to communicate what actual words failed to express.[71]

In the gigue-like closing aria, meanwhile, the musical realization might have worked to restore the "calm and willing heart . . . receptive to God's Word and Truth" that Martin Luther thought the right kind of musical stimulation could engender.[72] The steady rhythmic contours in the characteristic lilting 12/8 meter of the dance form likely encouraged an even, controlled flow of air and blood in the singer's production of pleasantly fluent vocal phrases, which in turn would have afforded a similarly regulated psychosomatic state in a well-disposed listener (fig. 6). As the nerve fluids circulating through a congregant's fibers enveloped body and soul in an

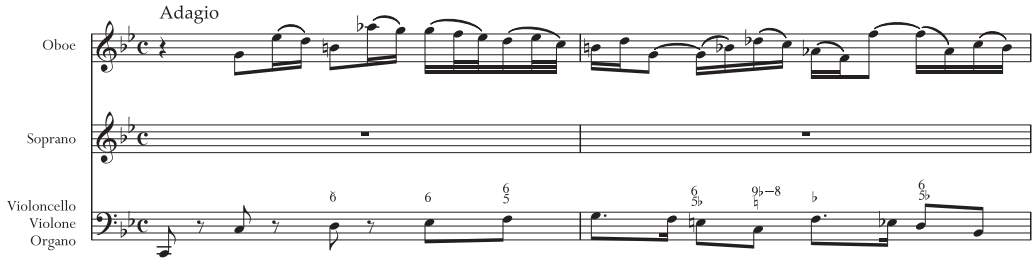

FIGURE 5a. Bach, "Mein Herze schwimmt im Blut," BWV 199/2, mm. 1–2.

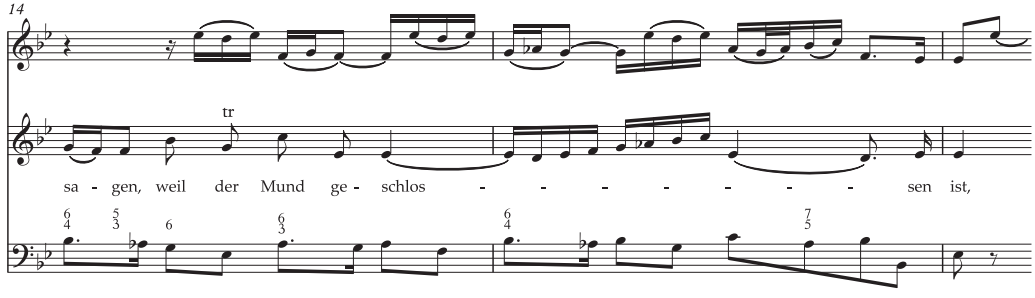

FIGURE 5b. Bach, "Mein Herze schwimmt im Blut," BWV 199/2, mm. 14–16.

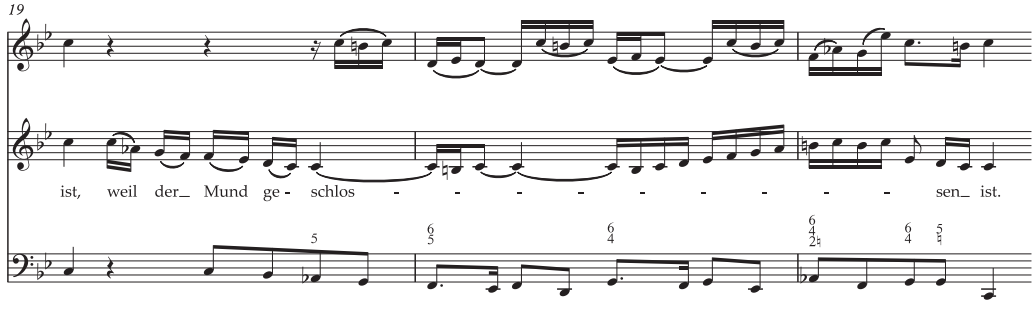

FIGURE 5c. Bach, "Mein Herze schwimmt im Blut," BWV 199/2, mm. 19–21.

agreeable harmonious motion, the disquieted mind and distracted senses could be called to order and prepared to take in God's word via the sermon that would most likely have followed the cantata performance; for, as Raupach noted, "our hearing and our devotion are precious things that easily tire and flee."[73] In Christoph Graupner's version of the final aria, the heart seems to be coaxed into a yet more expansive state of elation, whose particular emotional hue is equally difficult to pinpoint (fig. 7). The ensemble's

insistent dotted motives seem to offer a case in point for Arnie Cox's wonderment, in his recent volume on *Music and Embodied Cognition*, about "how a musical leap somehow feels something like an actual leap."[74] Strikingly, the interconnection of emotional, motor, and cognitive processes that Cox identifies as key to this experience closely mirrors the intermingled agencies of body, mind, and spirit that for early modern commentators constituted the foundation of music's affective force. Hearing a cantata within the Lutheran liturgy thus would have formed part of a communal psychosomatic practice that controlled and strengthened the individual believer's physical well-being and devotional engagement.

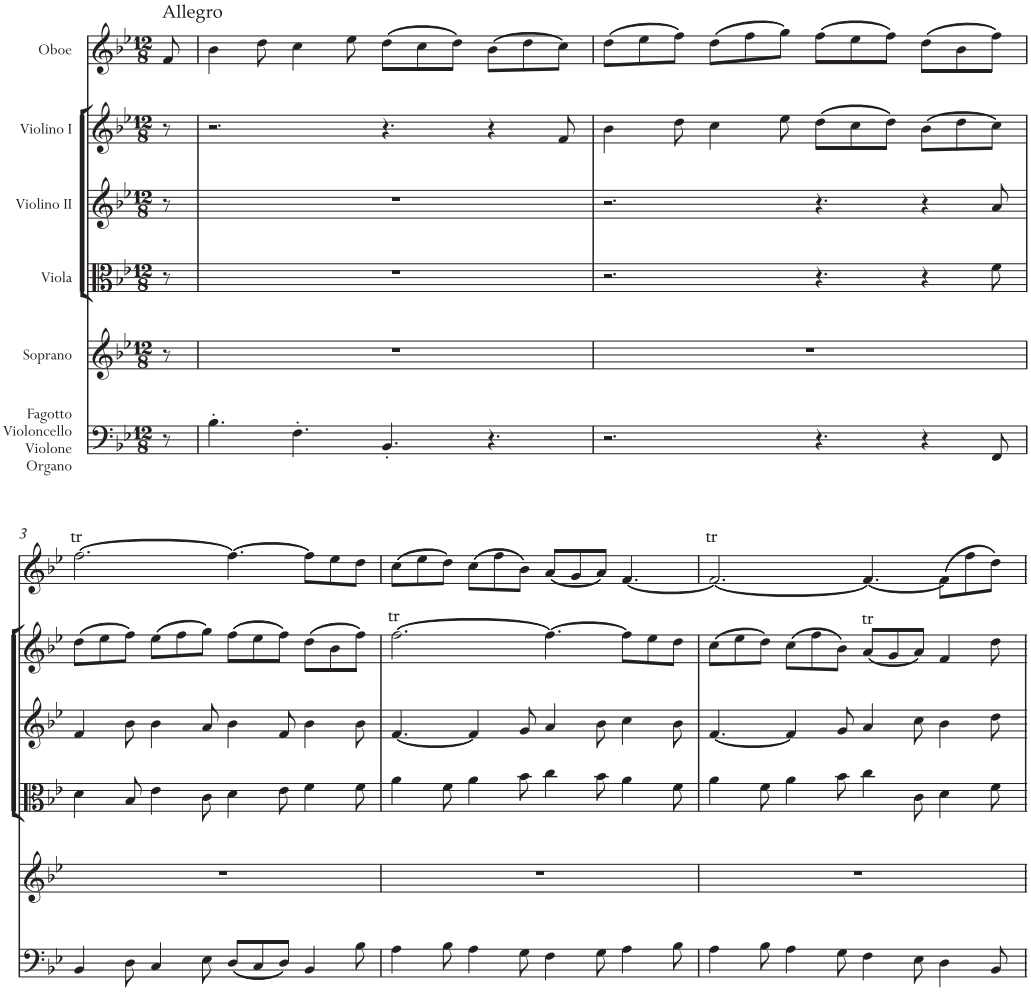

FIGURE 6. Bach, "Mein Herze schwimmt im Blut," BWV 199/8, mm. 1–5.

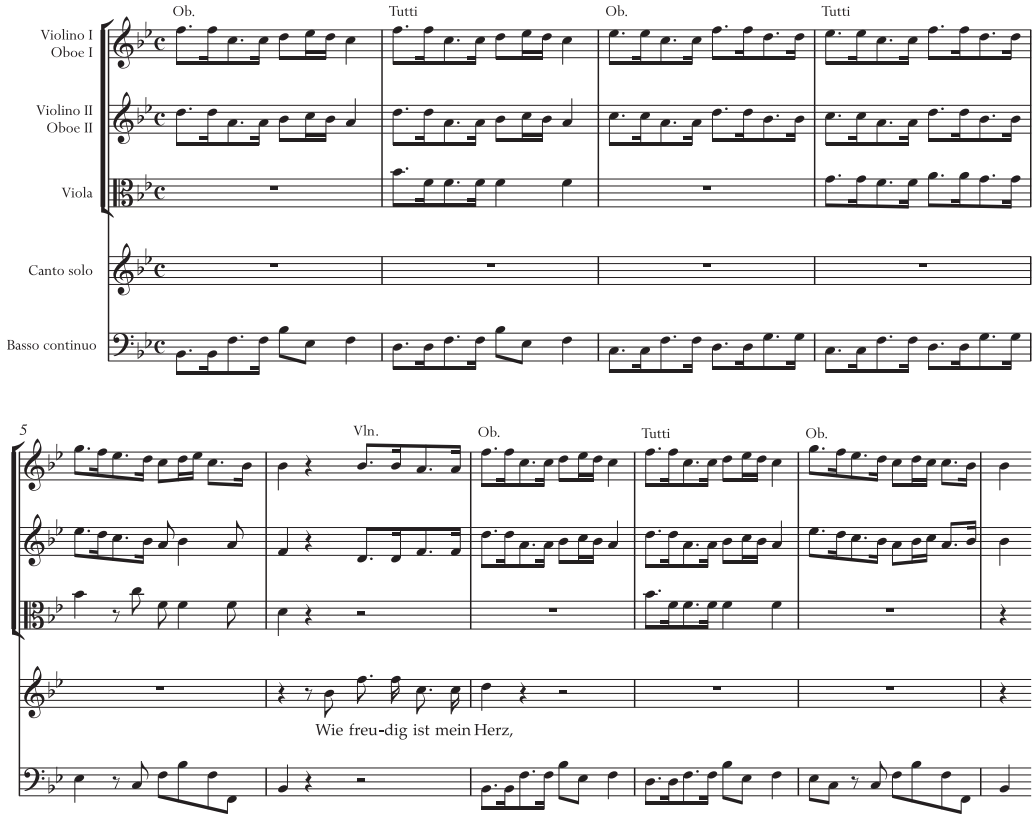

FIGURE 7. Christoph Graupner, "Mein Herze schwimmt im Blut," aria: "Wie freudig ist mein Herz," mm. 1–10.

Considering Bach's and Graupner's settings in tandem can serve as a reminder, too, that the kinds of bodiliness enabled in these acts of musicking were as manifold as the affective motions they elicited—always implying bodies, in other words, rather than "the body." As John Butt has observed, Bach's music suggests a remarkable combination of several potential modes of subjectivity, cautioning against a uniform reading of his arias as projecting a modern individuated subject position.[75] To return once more to the first aria of BWV 199, from the outset the porous bodies of oboist and vocalist generate a chain of contrapuntally entwined and motivically inseparable utterances that seem to enact a distributed, intercorporeal subjectivity, not reducible to one self-contained physical entity (fig. 8).[76] In Graupner's version of this aria, the dominant melodic line instead appears to issue unequivocally from a single contained being, whose sighs of inner turmoil emerge on a separate plane from its stagnating heartbeat, pulsating

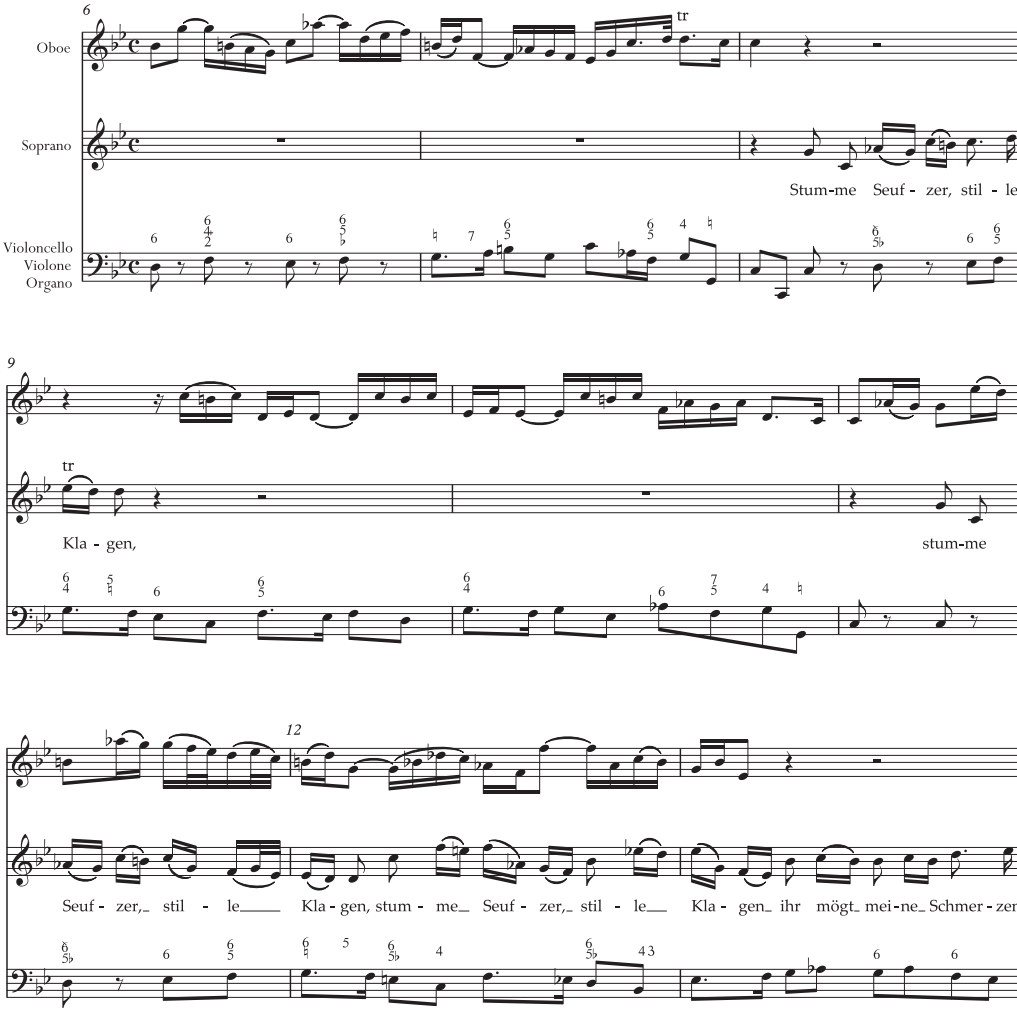

FIGURE 8. Bach, "Mein Herze schwimmt im Blut," BWV 199/2, mm. 6–13.

in the instrumental accompaniment (fig. 9). The idea of an "inner" self at one remove from its physical body that seems to become audible here might well be taken as evidence of the advancing "excarnation" of the world characteristic of Western early modernity.[77] Moreover, given the frequently noted conjunction between the emergence of modern forms of subjectivity and the rise of aesthetics, perhaps this more situated and inward-looking mode of musical expression in Graupner in turn encouraged a more distanced, contemplative listening stance over immediate affective contagion. But although this might appear to imply a teleological trajectory from

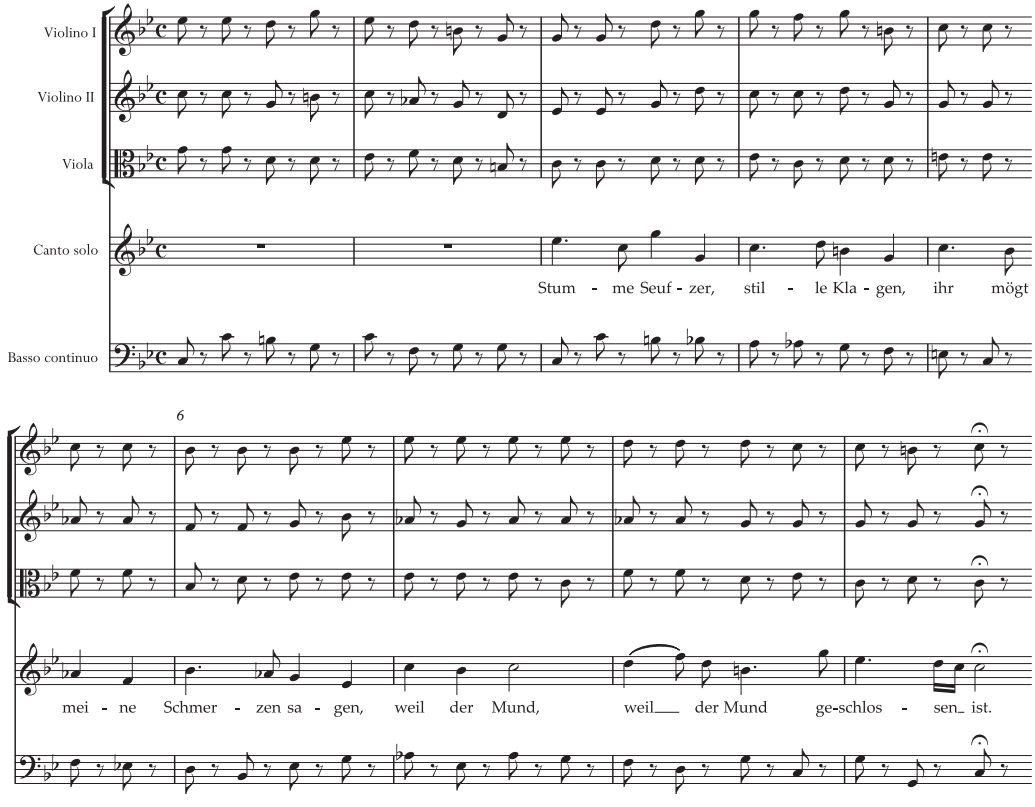

FIGURE 9. Graupner, "Mein Herze schwimmt im Blut," aria: "Stumme Seufzer," mm. 1–10.

a premodern distributed bodiliness in Bach to a modern individuated self in Graupner, I would remain wary of any narrative built on such direct equations of musical material with existential modes of being. Instead, the two versions could perhaps be taken as sounding evidence for the fruitful (or uneasy) coexistence of different possibilities of constituting body-souls through music.

For early eighteenth-century churchgoers, then, the scope and import of this music potentially reached far beyond our familiar preoccupations with text expression and theological doctrine, instead affording a material form of intercorporeal encounter. If we are minded to take Raupach and his contemporaries by their word, we must assume that being "sounded through" by Graupner's or Bach's cantatas could provoke existential change in an auditor's physiological and spiritual makeup, with the two domains linked so closely via the body's circulatory and life-giving structures that they were rendered virtually inseparable. The focus on music's body-

cultivating capacities suggested here potentially has wider implications for rethinking musical scores not just as performance scripts, as recent scholarship has convincingly advocated, but more radically as somatic scripts that inscribe particular modes of using, inhabiting, and altering the body.[78] If most written documents in Western history can be understood to encode physical or performative acts to a certain extent, then musical scores arguably occupy a position closer to the material, bodily end of this spectrum. Conceived as a somatic script, a Bach or Graupner cantata score afforded the memory of and potential for a particular set of corporeal actions, reactions and interactions between performers' and listeners' body-souls, thereby offering eloquent testimony to music's historically particular bodily presence.

Of course, from a twenty-first-century perspective, any attempt to recover music's earlier assumed potential for psychosomatic transformation necessarily runs up against the scholar's own experiential bodily reality. Akin perhaps to Friedrich Nietzsche's apocryphal quip about what happens to idealism when the philosopher has a bad cold, my own heart rate and blood pressure were no doubt implicated in shaping the reflections offered here; and it is unclear how far any researcher or listener today might be equipped to retune their ears and innards to this historical regime of body-soul reverberation. Yet at least my proposed re-embodiment of early eighteenth-century music making can serve as the starting point for imagining a more animated musical history of and in the flesh. As Holly Watkins and Melina Esse have recently suggested, perhaps musicology indeed has the capacity to serve as a "protocol for expanding self-awareness beyond the limited domain of symbolic thought."[79] Should that be the case, we might, in the process of unearthing the unapologetic carnality of these past sound worlds, end up discovering something surprisingly un-Cartesian about our own body-minds enmeshed in musicking.

Notes

1. Markus Rathey has noted several instances of the same notational quirk in Bach's *Christmas Oratorio*. See his *Johann Sebastian Bach's "Christmas Oratorio": Music, Theology, Culture* (New York, 2016), 1–2. The heart symbol furthermore appears repeatedly in the autograph of Bach's cantata "Herz und Mund und Tat und Leben" (BWV 147).
2. Georg Christian Lehms's text is published in his collection *Gottgefälliges Kirchen-Opffer* (Darmstadt, 1711), 64–65. J. S. Bach's setting (BWV 199) exists in three versions for Weimar (probably performed 1714), Cöthen (no specific performance date recorded), and Leipzig (probably performed 1723). Christoph Graupner was Hofkapellmeister in Darmstadt, where his setting was presumably performed in 1712 or after.

3. Gail Kern Paster, "Nervous Tension," in *The Body in Parts: Fantasies of Corporeality in Early Modern Europe*, ed. David Hillman and Carla Mazzio (New York, 1997), 111.
4. Calvin Stapert, *My Only Comfort: Death, Deliverance, and Discipleship in the Music of Bach* (Grand Rapids, 2000), 67.
5. Thomas Csordas, "Embodiment as a Paradigm for Anthropology," *Ethos* 18, no. 1 (1990): 5–47.
6. Mark M. Smith, "Producing Sense, Consuming Sense, Making Sense: Perils and Prospects for Sensory History," *Journal of Social History* 40, no. 4 (2007): 848.
7. For a critical assessment, see various essays in Richard Taruskin, *Text and Act: Essays on Music and Performance* (New York, 1995).
8. Bruce R. Smith, *Phenomenal Shakespeare* (Chichester, 2010), 28. See also Carolyn Abbate, "Music: Drastic or Gnostic?," *Critical Inquiry* 30, no. 3 (2004): 505–36.
9. Susan James, *Passion and Action: The Emotions in Seventeenth-Century Philosophy* (Oxford, 1997), 42. Arguably these formulations still project too dualistic a view of the fluid interpenetrations of body, mind, soul, and spirit that characterized the formation of early modern subjectivities; but since "body-mind-soul-spirit" seems rather too cumbersome, the pithier "body-soul" will be adopted as a shorthand here.
10. Daniel Chua, *Absolute Music and the Construction of Meaning* (Cambridge, 1999), 78; Bonnie Gordon, *Monteverdi's Unruly Women: The Power of Song in Early Modern Italy* (Cambridge, 2004), 13.
11. James Q. Davies, *Romantic Anatomies of Performance* (Berkeley, 2014).
12. Elizabeth Le Guin, *Boccherini's Body: An Essay in Carnal Musicology* (Berkeley, 2006).
13. Penelope Gouk, "Music and the Emergence of Experimental Science in Early Modern Europe," *Sound Effects* 2, no. 1 (2012): 7.
14. See especially Penelope Gouk, *Music, Science and Natural Magic in Seventeenth-Century England* (New Haven, 1999).
15. Johann Helfrich Jüngken, *Vernünfftiger und erfarner Leib-Artzt* (Leipzig, 1699), 4. All translations are mine unless otherwise noted.
16. Johann Julius Hecker, *Betrachtung des menschlichen Cörpers Nach der Anatomie und Physiologie* (Halle, 1734), 366.
17. Christian Wolff, *Vernünfftige Gedancken Von dem Gebrauche Der Theile In Menschen, Thieren und Pflantzen* (Frankfurt, 1737), 433.
18. Johann Jacob Schmidt, *Biblischer Medicus Oder Betrachtung des Menschen, nach der Physiologie, Pathologie und Gesundheitslehre* (Züllichau, 1743), 174.
19. Judith Becker, *Deep Listeners: Music, Emotion, and Trancing* (Bloomington, 2004), 3.
20. See Miranda Anderson, *The Renaissance Extended Mind* (Basingstoke, 2015), passim.
21. Steven Blankaart, *Reformirte Anatomie/Oder Zerlegung des Menschlichen Leibes* (Leipzig, 1691), 283.
22. Christian Democritus, *Die Kranckheit und Arzney des thierisch-sinnlichen Lebens* (Frankfurt, 1713), 16. "Christian Democritus" is a pseudonym for Johann Conrad Dippel, tellingly associating the author with the materialism of the pre-Socratic philosopher.
23. Georg Heuermann, *Physiologie Dritter Theil, Welcher vornehmlich eine Beschreibung dererjenigen Würckungen des menschlichen Cörpers in sich enthält* (Copenhagen, 1753), 57.
24. Veit Erlman, *Reason and Resonance: A History of Modern Aurality* (New York, 2010), esp. 69–110.

25. Georg Heuermann, *Physiologie Zweyter Theil. Welcher eine deutliche Beschreibung derer vornehmsten Würkungen und Verrichtungen der Seele in sich enthält* (Copenhagen, 1752), 806–7.
26. Jüngken, *Leib-Artzt*, 139.
27. Wolff, *Vernünfftige Gedancken*, 406; Hecker, *Betrachtung des menschlichen Cörpers*, 409.
28. Schmidt defines the "motus mixti" as having "something corporeal and something spiritual, such as the sensations or sense impressions and the affects or motions of the soul," *Biblischer Medicus*, 55. René Descartes famously grappled with the problematic status of the affects in his *Les Passions de L'Ame* (Paris, 1649).
29. Schmidt, *Biblischer Medicus*, 64.
30. Ibid., 65–68.
31. My translations of the libretto are based on Alfred Dürr, *The Cantatas of J. S. Bach: With Their Librettos in German-English Parallel Text*, rev. and trans. Richard D. P. Jones (Oxford, 2005), 490–91.
32. For a classic theological reading of the cantata and its tonal scheme, see Eric Chafe, *Tonal Allegory in the Vocal Music of J. S. Bach* (Berkeley, 1991), 141–42.
33. Georg Ernst Stahl, *Praxis Stahliana*, 3rd ed. (Leipzig, 1745), 1315.
34. Schmidt, *Biblischer Medicus*, 69.
35. Sigismund Scherertz, *Fuga Melancholiae cum Speculo Tentationum Spiritualium* (Lüneburg, 1682), 21.
36. Schmidt, *Biblischer Medicus,* 265.
37. Cited in Peter Damrau, *The Reception of English Puritan Literature in Germany* (London, 2006), 109.
38. Stahl, *Praxis Stahliana*, 1325.
39. Daniel Dyke, *Nosce Te Ipsum Oder Selb-Betrug Sampt der Wahren Bueß* (Frankfurt, 1681), 657, 692–93.
40. Stahl, *Praxis Stahliana*, 241.
41. August Hermann Francke, *Quedlinburgisches Zeugniß/Oder Predigt Von der Offenbarung der Herrlichkeit Christi* (Halle, 1699), 95.
42. Scherertz, *Fuga Melancholiae*, 69, 72.
43. See for instance Heuermann, *Physiologie Zweyter Theil*, 42.
44. Dyke, *Nosce Te Ipsum*, 741; Heinrich Müller, *Geistliche Seelen-Musik Bestehend In Zehen Betrachtungen*, 3rd ed. (Frankfurt, 1684), 89. Müller was one of the key seventeenth-century authors present in J. S. Bach's own library; see Robin A. Leaver, *Bachs theologische Bibliothek: eine kritische Bibliographie* (Neuhausen, 1983), 37–41.
45. Scherertz, *Fuga Melancholiae*, 18.
46. Stapert, *My Only Comfort*, 68.
47. Isabella van Elferen, "The Hungry Soul: Communion Mystics and Physiology in J. S. Bach's 'St. Matthew Passion,'" *Bach: Journal of the Riemenschneider Bach Institute* 40, no. 1 (2009): 36.
48. Bruce R. Smith, "Hearing Green," in *Reading the Early Modern Passions: Essays in the Cultural History of Emotion*, ed. Gail Kern Paster, Katherine Rowe, Mary Floyd-Wilson (Philadelphia, 2004), 168.
49. Cited in Müller, *Geistliche Seelen-Musik*, 8–9.
50. Christoph Frick, *Music-Büchlein Oder Nützlicher Bericht Von dem Uhrsprunge/ Gebrauche und Erhaltung Christlicher Musik* (Lüneburg, 1631), 90.
51. Christoph Raupach, *Veritophili Deutliche Beweis-Gründe/Worauf der rechte Gebrauch der Music, beydes in den Kirchen/als ausser denselben/beruhet* (Hamburg, 1717), 19.
52. Johann Adolph Scheibe, *Critischer Musikus*, 2nd ed. (Leipzig, 1745), 85.

53. Johann Wilhelm Albrecht, *Tractatus physicus de effectibus musices in corpus animatum* (Leipzig, 1734), 110, 115. On the long-standing idea of the "corpus animatum" in medieval and Renaissance thought, see Tanja Klemm, *Bildphysiologie: Wahrnehmung und Körper in Mittelalter und Renaissance* (Berlin, 2013), esp. 25–54.
54. On "haptic voice," see Laura Tunbridge, "Scarlett Johansson's Body and the Materialization of Voice," *Twentieth-Century Music* 13, no. 1 (2016): 139–52.
55. Melissa Gregg and Gregory J. Seigworth, *The Affect Theory Reader* (Durham, NC, 2010), 1.
56. Donovan O. Schaefer, *Religious Affects: Animality, Evolution, and Power* (Durham, NC, 2015), 209.
57. Steve Goodman, *Sonic Warfare: Sound, Affect, and the Ecology of Fear* (Cambridge, MA, 2009), 83, xiv.
58. See Tanya Kevorkian, *Baroque Piety: Religion, Society, and Music in Leipzig, 1650–1750* (Aldershot, 2007), 29–52.
59. Baruch Spinoza, *Ethics: With the Treatise on the Emendation of the Intellect and Selected Letters*, trans. Samuel Shirley (Indianapolis, 1992), 103. Cf. Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation* (Durham, NC, 2002), esp. 15–17. Goodman turns to Spinoza in *Sonic Warfare*, 99–101; Schaefer discusses him in *Religious Affects*, 25–28 and passim.
60. Ruth Leys, "The Turn to Affect: A Critique," *Critical Inquiry* 37 (2011): 434–72.
61. Brian Kane, "Sound Studies Without Auditory Culture: A Critique of the Ontological Turn," *Sound Studies* 1 (2015): 8.
62. Johann Mattheson, *Der Vollkommene Capellmeister* (Hamburg, 1739), 16. What is striking here is that, even though Mattheson's theory of music overall is only marginally concerned with matters of flesh and blood, and he is generally appreciated now as a progressive, enlightened commentator on music, the same physiological assumptions still structure his account of music's affective charge.
63. Ibid., 17.
64. Raupach, *Veritophili Deutliche Beweis-Gründe*, 21–22.
65. Ibid., 22.
66. Christian Scriver, *Seelen-Schatz* (Magdeburg, 1731), 170.
67. Wolff, *Vernünfftige Gedancken*, 66.
68. Naomi Cumming, "The Subjectivities of 'Erbarme Dich,'" *Music Analysis* 16, no. 1 (1997): 23.
69. For a classic account, see Walter Serauky, "Affektenlehre," in *Die Musik in Geschichte und Gegenwart*, ed. Friedrich Blume (Kassel, 1955), 1:113. For a critique of *Affektenlehre* as a historical concept, see George J. Buelow, "Johann Mattheson and the Invention of the Affektenlehre," in *New Mattheson Studies*, ed. George J. Buelow and Hans Joachim Marx (Cambridge, 1983), 393–408. See also John Butt's astute critique of "faithful" Bach interpretation in his *Bach's Dialogue with Modernity: Perspectives on the Passions* (Cambridge, 2010), 152ff.
70. Jenefer Robinson, *Deeper Than Reason: Emotion and Its Role in Literature, Music, and Art* (Oxford, 2005), 273 and passim.
71. Sebastian Göbel, *Frommer Christen Betendes Hertz und Singender Mund* (Nuremberg, 1694), n.p.
72. Cited in Dietrich Bartel, *Musica Poetica: Musical-Rhetorical Figures in German Baroque Music* (Lincoln, 1997), 8.
73. Raupach, *Veritophili Deutliche Beweis-Gründe*, 12.
74. Arnie Cox, *Music and Embodied Cognition: Listening, Moving, Feeling, and Thinking* (Bloomington, 2016), 5.

75. Butt, *Bach's Dialogue with Modernity*, 36–96.
76. For a recent account of distributed subjectivity as "a field of ebbs and flows that can appear and be engaged at any expanse, from the molecular to the social, from pipe organs to ethnicities," see Anahid Kassabian, *Ubiquitous Listening: Affect, Attention, and Distributed Subjectivities* (Berkeley, 2013), 111.
77. "Excarnation" is Yves Bonnefoy's term, cited in David Hillman, *Shakespeare's Entrails: Belief, Scepticism and the Interior of the Body* (Basingstoke, 2007), 4.
78. See especially Nicholas Cook, *Beyond the Score: Music as Performance* (New York, 2013).
79. Holly Watkins and Melina Esse, "Down with Disembodiment; or, Musicology and the Material Turn," *Women and Music: A Journal of Gender and Culture* 19 (2005), 167.